

In re Patent Application of:
JOFFE ET AL.
Serial No. 09/997,228
Filing Date: 11/29/01

REMARKS

Claims 1 and 4-16 remain in this application.
Claims 2, 3 and 17-20 are cancelled. Claims 1, 4, 9, 10, and 11 are amended.

Applicants thank the Examiner for the detailed study of the application and prior art, notably U.S. Patent No. 5,585,763 to Navabi et al. (hereinafter "Navabi"), which has been used by the Examiner to reject all claims as anticipated.

Applicants have amended the claims to place this case in condition for allowance.

Applicants note that the present claimed invention improves the power utilization efficiency using a positive feedback scheme, such as disclosed in commonly assigned U.S. Patent No. 5,856,758 to Joffe et al. (hereinafter "Joffe"). This type of circuit disclosed in Joffe improves efficiency in a positive feedback-based line driver circuit architecture and reduces the required output signal amplitude excursion required for driving the line. The Joffe circuit enhances linearity allowing the line to be driven from amplifiers, which run with the lower supply voltage resulting in lower power dissipation. With the present invention, it is not required to use any power-dissipating element in series with the driver output. The effective output impedance Z_{out} of the line driver is synthesized by feeding back a mirrored fraction of the output current to an input node of the driver amplifier. The output impedance Z_{out} of the driver is defined in terms of the mirror current ratio K and the value of the driver feedback resistor.

As now claimed in the two independent circuit claims 1 and 11, the output port includes an output current node. An

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output voltage feedback device, such as a resistor in one non-limiting example, is coupled between the output port and an input of the operational amplifier circuit. A current mirror circuit is coupled between the output port and input of the operational amplifier and operative to feedback a current representative of the output current applied to the output port such that the synthesized output impedance is defined in accordance with the feedback current. A current mirror node tracks the output voltage at the current output node. A second operational amplifier has an input coupled to the output current node and another input coupled to the current mirror node thereby removing current mirror distortion for values of load resistance.

Although Navabi may disclose two amplifiers driven by complimentary signals to form a differential amplifier with controlled output impedance, nowhere does Navabi disclose or suggest the circuit as now claimed to remove current mirror distortion for values of load resistance and tracking output voltage using a combination of circuit components as claimed. The present invention uses an output voltage feedback device and a current mirror circuit coupled between the output port and input of the operational amplifier such that the synthesized output impedance is defined in accordance with the feedback current. A current mirror node tracks output voltage at the current output node. A second operational amplifier has an input coupled to the output current node and another input coupled to the current mirror node to remove the current mirror distortion for values of load resistance.

In Navabi, output amplifiers 347, 357 are operative with first and second error transistors or amplifiers 370,

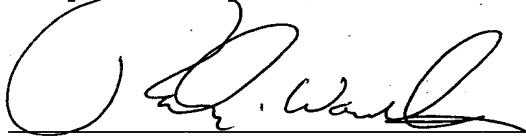
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375. Navabi operates in a different functional manner as clearly explained in its columns 5 and 6. FIG. 5 clearly shows that the functional operation would be different based upon the circuit construction.

Accordingly, Applicants contend that the present case is in condition for allowance and respectfully requests that the Examiner issue a Notice of Allowance and Issue Fee Due.

If the Examiner has any questions or suggestions for placing this case in condition for allowance, the undersigned attorney would appreciate a telephone call.

Respectfully submitted,



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I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: **MAIL STOP AF, COMMISSIONER FOR PATENTS, P.O. BOX 1450, ALEXANDRIA, VA 22313-1450**, on this 10th day of March, 2005.

